TR-4800M
Digital Two-Way Radio/Telephone Interconnect
>>>> QUICK START GUIDE

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FOR

ISO9001 Certified

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	Issue 5	25/08/2011	Tx Interrupt & Hang times
	Issue 6	28/09/2011	Base Radio Screen Shot
	Issue 7	20/12/2011	Master Reset Code
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TURBOTACT™ TR-4800M

DIGITAL TWO WAY RADIO/TELEPHONE INTERCONNECT

19" RACK MOUNT/DESK TOP VERSION

Quick Start Guide - Document Number G11201

CONTENTS

design2000

Est. 1968

DESIGN TWO THOUSAND PTY LTD

1. INTRODUCTION

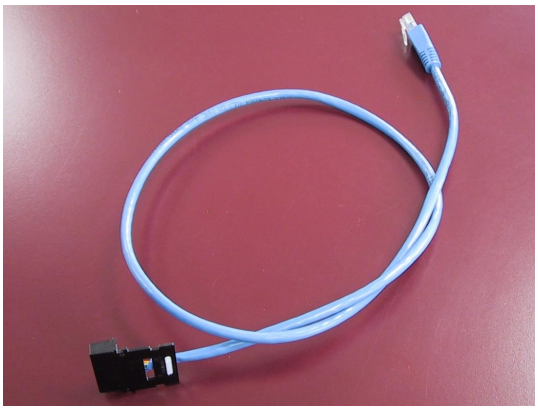
Thank you and congratulations on purchasing this Australian engineered and manufactured innovative product. You are guaranteed to have years of dependable and trouble free service from this all new digital radio/telephone interconnect – the TURBOTACT™. We trust that the MOTOTRBO™ digital radio revolution proves to be the most powerful yet straightforward communication system that you have ever used.

1.1 What's in the Box?

EVERYTHING *that you'll need to make and receive telephone calls on your MOTOTRBO™ Motorola professional digital two-way radio mobiles and hand-helds.*

TURBOTACT™ Radio/Telephone Interconnect Unit Part # TR-4800M

Telephone lead
RJ-12 to RJ-12 Line Cord 2m
Part # W2492



Radio Interface Cable
Matrix Accessory Connector PMLN5072A to RJ-45
Part # CA-5166

Power Cable
BL-2 figure 8 power cable 1.8m
Part # CA-5165

Also included

Mounting Brackets x 2
For 19" rack mounting
Part # MR-4386

Rubber Bumpers x 4
For desktop installation
Part# REI 24-Tr

This Handbook
Quick Start Guide
Part # G11201

FOR

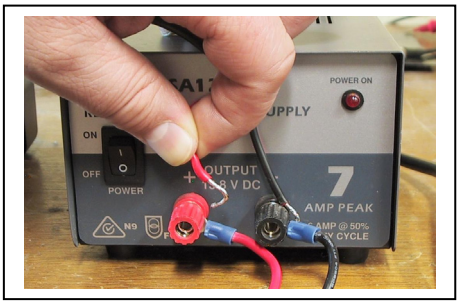
MOTOTRBO™
Motorola Professional **DIGITAL** Two-Way Radio System

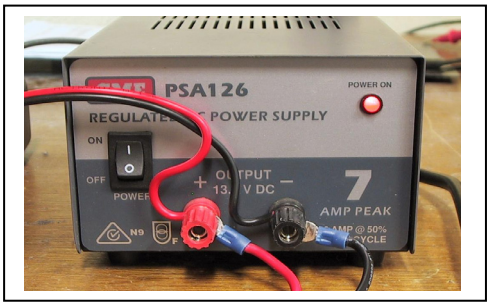
2. HOOKING UP TURBOTACT

Hooking up TURBOTACT is easy. You can just plug and play as described here.

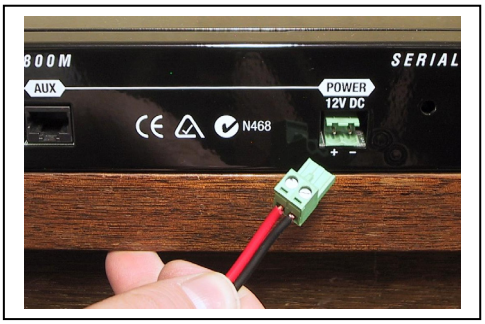
2.1 Power

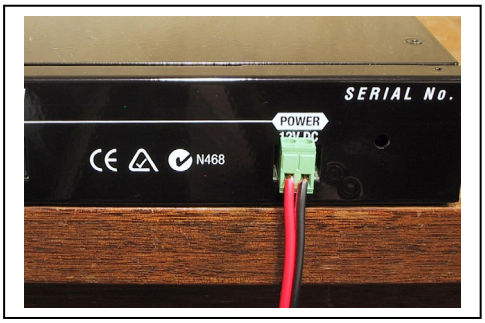
Connect the tinned ends of the Power Lead to the radio's power supply





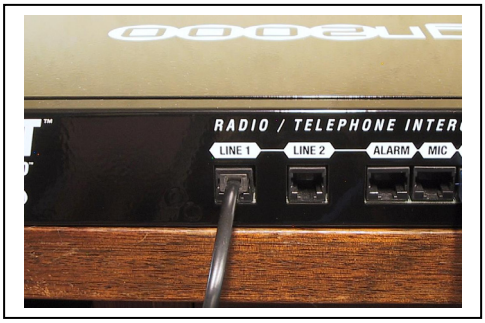
Plug the connector of the Power Lead into TURBOTACT

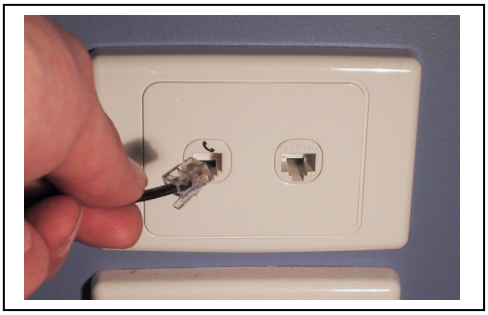


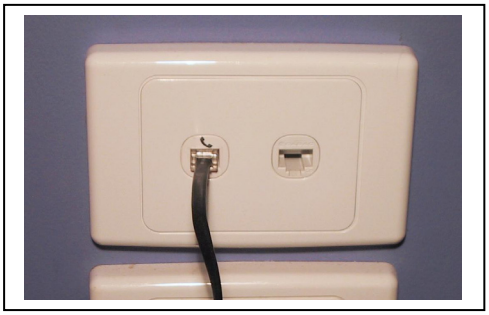


2.2 Telephone Line

Plug the TURBOTACT telephone line cord jacks into the LINE 1 socket of TURBOTACT and into a standard telephone wall socket.





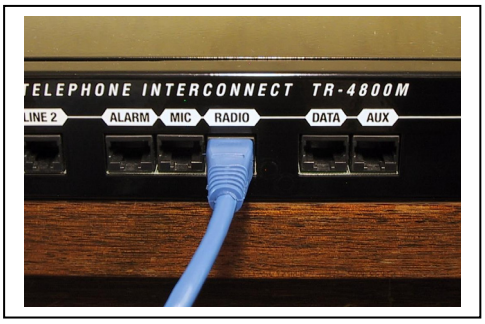


2.2.1 Tech Tip:

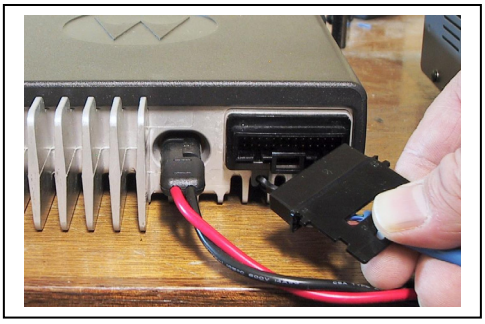
The telephone wall socket must be an analog telephone line or analog extension port. If you have a proprietary digital or VoIP phone system, all systems have analog port capability for fax machines, traditional cordless phones, conventional corded analog phones etc.. If you don't already have an analog extension port ready for your TURBOTACT talk to your IT manager or voice engineer to arrange one. There are called FXS or ATA ports. To test an analog extension, simply plug in an analog phone and see if you get dial tone. When plugged in as shown above the telephone connection is good to go!

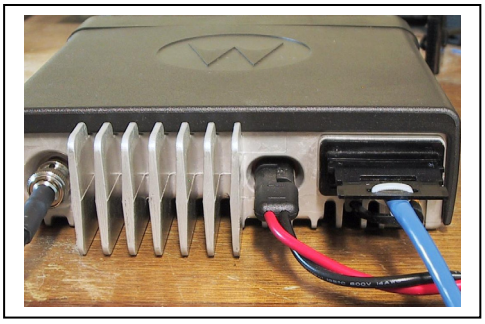
2.3 Radio

Plug the Radio Interface Cable's RJ45 jack into TURBOTACT's RADIO socket.



Plug the Radio Interface Cable's Matrix Accessory plug into the Radio's Accessory (MAP) connector.



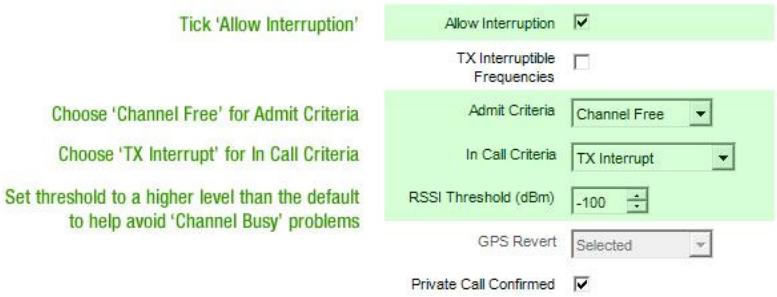


Congratulations!
You have now made all of the physical connections required for TURBOTACT to make and receive telephone calls.

2.3.1 Tech Tip:

The DM 3600 or DM 3601 base radio that TURBOTACT is connected to needs the following programming:

- Tx Interrupt ON:
  (CPS Channel screen)
  Allow Interruption [check]
  In Call Criteria [TX Interrupt]



- Be able to receive group calls (when diverting phone calls to a group).
- Set Tx audio level (level from this base radio to other radios), we suggest 0dB with AGC turned OFF.
- Configured in CPS for a cable type of "REAR DATA" instead of the factory default "MOTOROLA" cable type. Once the correct cable type has been set, the base radio should be down-powered and the supplied TURBOTACT cable fitted between TACT and the radio's rear MAP connector before power is re-applied.

Other radios don't require any special programming, however we suggest:

- Firmware version 1.07.00 or later so that the radio can transmit DTMF to make telephone calls. Earlier versions can receive telephone calls but only contact one preprogrammed telephone number.
- Field radios expected to use TURBOTACT must be allowed to interrupt the base radio which has "TX INTERRUPT" enabled. Make sure the following codeplug option is set in each field radio:
  `Channels-->Zones-->Digital-->In Call Criteria = "Tx Interrupt"`
- Although the default call hang-times are usually set at 3000ms and 4000ms for Private and Group Calls respectively, it is recommended that hang times are not set lower than 1500ms (1.5 seconds) to ensure smooth TURBOTACT operation.

2.4 Turning Everything On

Turn on the radio's power supply that also powers TURBOTACT.
TURBOTACT's POWER and READY indicators come on:

Seven segment display will be blank in the idle READY state

Turn on the base radio and you will see "TurboTACT" for about five seconds:

TURBOTACT and the Radio are communicating.

You can now start making and receiving telephone calls on your radios.

3. USER INSTRUCTIONS

3.1 Making Telephone Calls

Manual Dial Any Number:

- Place a call to the base radio and listen for "*ENTER TELEPHONE NUMBER FOLLOWED BY HASH*".
- Press your PTT button and dial the required telephone number then #. Release PTT.
- Listen for normal ring tone or busy tone. (If busy, the call automatically disconnects).
- When answered press your PTT button to talk and release your PTT button to listen.
- To hang up press # or just let the call expire.

Note: On a MOTOTRBO™ radio system the radio user must PTT and wait for the Transmit Interrupt Clear-to-Talk tone ("*Biddle-up*") before they can speak into the mic and be heard by the other party.

Automatic Diversion to a Telephone:

If mobiles do not have DTMF dialing capability, it is possible for TACT to automatically dial a pre-programmed telephone number when a *Call Alert* is received from the radio. The mobile user *Call Alerts* the base radio (via a *Private Call*) and receives ring tone while TACT dials the pre-programmed phone number.

To Program Automatic Dialing of a Telephone Number from the Keypad of TACT:

1. Press * 85 ttt…#, where ttt… is the phone number to be dialed automatically on receipt of a radio call.
2. Press * 85 0 # to turn this option off.

3.2 Receiving Telephone Calls

- On an incoming telephone call your radio will ring with the base radio's ID.
- Press your PTT button to take the call.

3.2.1 PTT to Answer or DTMF * to Answer an incoming Telephone Call

When diverting incoming telephone calls to a Group (see next page), you can set TurboTACT so that a PTT will answer a telephone call or a DTMF * will answer a telephone call. The DTMF * method is used to prevent a radio from accidentally answering a telephone call by pressing PTT during a group conversation.

To put TURBOTACT into DTMF * Answer Mode from the TURBOTACT™ Keypad

- Press *6703#
- Press *10
  - TURBOTACT reads back 10 – 3
- Press 1
  - TURBOTACT reads back 10 – 1
- Press *# to save the change.

To put TURBOTACT into PTT Answer Mode from the TURBOTACT™ Keypad

- Press *6703#
- Press *10
  - TURBOTACT reads back 10 – 1
- Press 3
  - TURBOTACT reads back 10 – 3
- Press *# to save the change.

3.3 Calling Radios from a Telephone

Manual Answer and Dial Any Mobile:

- Dial TURBOTACT's telephone number and listen for "*Enter mobile number followed by hash*" (please note that this can be an individual private ID number or a group ID number. To dial a group ID number, enter 99 before the group ID number.
- Listen for "*CONNECTING*" followed by short ring tones.
- When answered, the radio user will press their PTT button to talk and release their PTT button to listen.
- To end the call press # or just hang up.

Automatic Diversion to a Mobile or Group:

This mode is used to automatically divert incoming telephone calls to a mobile radio or radio group. When an incoming telephone call is received, TURBOTACT dials the mobile number stored in memory as programmed below. Callers into TURBOTACT will hear normal ringing tone until the call is answered by the mobile.

To Activate Automatic Diversion to a Mobile from the Keypad of TURBOTACT:

- Press * 86 mm…#, where mm… is the mobile number to which incoming telephone calls will be diverted.
- To divert to a group, press * 86 99 gg…#, where gg… is the group number.
- Press * 86 0 # to turn this option off and revert to Manual Answer mode.

Auto-Attendant Mode:

In this mode, telephone callers can "direct indial" one of nine radio groups or private radio numbers by pressing only a single digit 1 to 9.

- Dial TURBOTACT's number and listen for "*ENTER THE MOBILE IN-DIAL CODE 1 to 9*" *or* a customized announcement.
- Press a single digit (1 – 9) to reach one of the pre-programmed radio groups or private radio.
- Listen for "*CONNECTING*" followed by short ring tones.
- When answered, the radio user will press their PTT button to talk and release their PTT button to listen.
- To end the call press # or just hang up.

3.4 Speed Dialling

- You can press #01 to #99 to speed dial one of up to 99 preprogrammed telephone numbers. Ask your installer for your fleet's speed dial list.

3.5 Last Number Redial

- Press #00 to redial the last telephone number dialed.

4 ENCORE

4.1 Storing Speed Dial Telephone Numbers

To Store Speed Dial Telephone Numbers from the TURBOTACT™ Keypad

- Press *2xx, where xx is the required memory location (01-99).
- Enter the required telephone number.
  - Note that you may enter dialing pauses, * and # as part of the number. *# = dialing pause, ** = * and ## = #
- Press #.
  - *The number is played back.*
- NOTE THE NUMBER DOWN IN A SPEED DIAL INDEX.
- To check a stored telephone number in memory you can press *2 xx #.

4.1.1 Storing Radio In-Dial Numbers for Auto Attendant Mode

In Auto-Attendant Mode, telephone callers can press a single digit to contact pre-programmed radio IDs or groups. TURBOTACT uses the last nine speed dial numbers (memory locations 91 – 99) but firstly you need to put TURBOTACT into Auto Attendant mode.

To put TURBOTACT into Auto-Attendant Mode from the TURBOTACT™ Keypad

- Press *6703#
- Press *10
  - TURBOTACT reads back 10 – 3
- Press 4
  - TURBOTACT reads back 10 – 4
- Press *#.

To Store Radio In-Dial Numbers from the TURBOTACT™ Keypad

- Press *29x, where x is the required memory location (1 – 9).
- Enter the required radio number. Prefix this with 99 for a group number.
- Press #.
  - *The number is played back.*
- NOTE THE NUMBER DOWN IN A RADIO IN-DIAL INDEX.
- To check a stored radio number in memory you can press *2 9x #.

To Turn Off Auto-Attendant Mode from the TURBOTACT™ Keypad

- Press *6703#
- Press *10
  - TURBOTACT reads back 10 – 4
- Press 3 (for PTT Answer) or 1 (for DTMF * Answer)
  - TURBOTACT reads back 10 – 3 (or 1)
- Press *#.

4.2 Flier

TURBOTACT™, the Telephone Access Control Terminal, interconnects a MOTOTRBO™ two-way radio system to a telephone line or PABX extension. It allows you to make and receive telephone calls on your MOTOTRBO™ Motorola professional digital two-way radio mobiles and hand-helds.

Design Two Thousand Pty Ltd, established in 1968, has been making TACT units since 1987, and the TR-4800M is the new flagship model designed exclusively for use with the MOTOTRBO™ digital radio revolution. It is the digital successor to the well-proven TA-4800.

FEATURES

- Make and receive telephone calls on your MOTOTRBO™ professional digital two way radio system.
- Introducing TURBO TACT – the most powerful, yet simple to use telephone interconnect ever made.
- All call, group call and private call capable
- Half duplex – radio user has full voice path control
- Talk to any telephone in the world
- Last number redial
- 100 speed dial numbers
- Automatic disconnect
- Record output for recording/logging radio-telephone calls
- In-field firmware upgradeable
- Simple installation – comes complete with interface and power cables for connection to any DM36xx mobile in your fleet, telephone cord for PABX extension or ordinary phone line. Plug & Play.
- TACT is a certified Motorola XCMP-Based peripheral

4.3 Specifications

Enclosure		1U high, 19” rack mount, 250mm deep.
Finish		Dulux piano finish gloss black powder coat.
Power Requirement (from radio supply)		12V d.c. nominal, (10.6V → 26.4V tolerant)
Power Consumption		300 mA @ 12V
Initial Start Up Current		750 mA for 90 ms @ 12V
Operating Temperature Range		-10 → +60 ° C.
Storage Temperature Range		-20 → 80 ° C ambient.
Humidity, Storage and Operating		To 98% non condensing.
Mean Time Between Failure		> 20 years.
Data Interface		XCMP/XNL over USB
TURBOTACT™ Radio Interface	IN	4K7 → 10K Ohm input impedance. Strappable 600 Ohm termination.
	OUT	600 Ohm output impedance.
Input level		-30 → +6 dBm adjustable (-6.9 dBm nom.).
Output level		-30 → +6 dBm adjustable. (-19.72 dBm nom.).
Frequency range		300 Hz → 5 kHz.
CH Act. Detect (analogue)		High impedance input, floating to +5V, grounded by radio to indicate channel activity (inverted sense programmable).
PTT (analogue)		Relay contact, switching to ground for PTT activation.
Telephone Line Interface		Standard two wire analogue ring in/loop out.
Ringer Equivalent Number (REN)		0.5.
Ring Detect		≥ 10V RMS @ 13-55 Hz (25 Hz nominal), ≥100 ms.
Answer Delay		100 ms.
In-band Signaling		Dual Tone Multi Frequency (DTMF).
DTMF Dialer		100 ms on/off, -10dBm.
DTMF Receiver		-40 → 0 dBm sensitivity.
5 Tone Paging Protocol		CCIR 40 ms.
Keypad		12 push button 4 x 3 numeric silicone membrane keypad.
Displays		7 segment numeric readout (blue), 6 x status LEDs.
RS232		9600 baud, N81 format.
Telephone Service Tone detection		-30 dBm sensitivity, automatic cadence detection.
ACMA Supplier Code Number		N468
ERAC Responsible Supplier Number		E1287
New Zealand Telepermit		PTC 210/96/003
FCC Certification		PART 68: US: TEROT01BTR-4800M
Industry Canada Certification		CS-03: IC: 9947A-TR4800M
Warranty		Two years
Firmware Storage Medium		EPROM & FLASH MEMORY
System Number		V4833.52 or higher (in EPROMs B1 & B2)
Speech Number		V4901.03TRBO (in EPROM ROM2)
USB/XCMP Interface		V1.06 or higher (in flash memory)
Master Reset Command		*67709602# (Caution, this sets everything back to factory default)

4.4 Standard accessories supplied with TURBOTACT™

Telephone lead	RJ-12 to RJ-12 Line Cord 2m	Part # W2492
Power Cable	BL-2 figure 8 power cable 1.8m	Part # CA-5165
Radio Interface Cable	Matrix Accessory Connector PMLN5072A to RJ-45	Part # CA-5166
Mounting Brackets x 2	For 19” rack mounting	Part # MR-4386
Rubber Bumpers x 4	For desktop installation	Part# REI 24-Tr

4.5 Warranty & Service Information

If problems are experienced with the operation of TURBOTACT™, talk to your installer first for advice. In most cases, problems can be diagnosed and rectified on-site or over the phone, avoiding unnecessary transportation and service costs.

Warranty

The equipment has a warranty against defects in material and workmanship for a period of **two years** from date of purchase. Within this period repairs, if necessary, are without charge for parts and labor.

See 'SERVICE INFORMATION' above. In the explicit event of a malfunction, please send the unit, (along with an accurate fault report, contact name and number, and a return address) for repair to your supplier.

Warranty Information for Wholesalers & Resellers only

Transport costs to the factory will be to the customer's account, and Design 2000 Pty Ltd will cover the return transport costs for warranty repairs. If units are sent to the factory and discovered to be 'No Fault Found', a service charge may apply and the return transport costs may be to the customer's account.

CUSTOMER SERVICE ENQUIRIES

+613 9758 5933

TURBOTACT™
FOR MOTOTRBO™
TR-4800M

FOR

MOTOTRBO™
Motorola Professional **DIGITAL** Two-Way Radio System

Designed and Manufactured by

design2000

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DESIGN TWO THOUSAND PTY LTD IS CERTIFIED TO ISO9001

ACMA SUPPLIER CODE: N468
ERAC RESPONSIBLE SUPPLIER NUMBER: E1287